Rehabilitation of Labral Tears

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Financial Disclosure

- I have no relevant financial relationships with commercial interests to disclose.

Anatomy of the Hip & Pelvis

Skeletal Anatomy of the Hip & Pelvis

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Anatomy of the Labrum

- Acetabular labrum
  - Fibrous rim of cartilage around the hip socket
  - Function
    - Provides stability to the joint
    - Management of the flow of vital joint fluids
      - Nourishment
      - Lubrication

Zones of the Labrum

- Extra-articular zone has good blood supply
- Intra-articular zone has poor blood supply

Symptoms

- Onset of symptoms typically insidious
  - Hip or groin pain, often radiates
  - Intra-articular snapping hip syndrome (~ 80% of the time)
  - Clicking
  - Giving way
  - Locking/catching
  - Trendelenburg gait
Symptoms

- Onset of symptoms (cont.)
  - Stiffness
  - Limited ROM
  - Pain with increased sitting
  - Pain with twisting/cutting/explosive outbursts

Causes/Mechanism of Injury

- Primary cause: femoral acetabular impingement (FAI) – anterior superior labrum is pinched
- Repetitive twisting, cutting, pivoting & hip flexion

Causes/Mechanism of Injury

- Capsular laxity/joint hypermobility
- Hip dysplasia
- Degenerative changes
- Anatomical/Structural
  - Abnormal shape/structure of the acetabulum labrum
  - Femoral head muscle weakness
Diagnosis

- Orthoscopic Exam
  - Most reliable
  - 100% accurate
- MRI
- Magnetic Resonance Arthrography (MRA)
  - Provides in-vivo image of the hip joint which is often difficult to visualize secondary to depth of articulation
  - Now the "GOLD STANDARD"

MR Arthrogram (MRA)

Oblique axial (a) and sagittal (b) MR arthrogram of the right hip showing a detached tear of the anterior labrum (arrows).
Conservative Therapy

- **Goal:**
  - Relieve pain
  - Improve function
  - Correct muscle instability

- **Activity modification**
  - Avoid pivoting/cutting
  - Avoid prolonged weight bearing activities

- **Physical Therapy**
  - Stretching and flexibility exercises
  - Strengthening hip muscles
  - Restore neuromuscular control
  - Improve posture
  - Intra-articular injection

Non-surgical Rehabilitation

- **Strengthening exercises**
  - Standing hip flexion/extension/ABD/ADD with progressive loading (resistance bands)
  - Lunges
  - Leg press/total gym

- **Stabilization exercises**
  - Lumbopelvic stabilization
    - Bridges, Mini-squats
Non-surgical Rehabilitation

- Balance/Proprioception
  - Single leg stand
  - Balance board

Surgical Intervention

- Signs or Symptoms > 4 weeks
- MRI or MRA
- Acetabular labral lesion – debridement or repair
- Dr. Wolff repair video

Surgical Intervention

[Diagram of surgical procedures: Debridement, Suture anchors, Labral refixation]
Surgical Rehabilitation

- Primary goals following surgery:
  - Minimize pain and inflammation
  - Protect surgically repaired tissue
  - Initiate early motion

Surgical Rehabilitation

- Stretching/Flexibility
  - Piriformis, psoas, quadriceps, hamstrings
- Strengthen hip ABDuctors, ADDuctors, & extensors
  - Begin with isometrics with lower extremity in neutral
  - Progress to include isotonics and core strength
- Gait training
- Balance/Proprioception exercises

Surgical Rehabilitation

- Proaxis Therapy
  - Labral debridement and labral repair
  - See patient checklist in Garrison, et al. reference

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# Dr. Muller’s Protocol

## Phase I

**Time frame**: Post-OP days 1 – 14  
**Goals**:  
- Protect healing tissue  
- Normalize gait pattern  
**Precautions**:  
- Crutches, 25% WB  
- Minimize scarring/swelling  
- Cautions with stairs/prolonged ambulation  
**Exercises**:  
- Pain control/Cryotherapy  
- Scar mobilization/Stretching – piriformis/HS  
- Progress PROM  
  - Week 1 – flexion 0° to 100°, Week 2 – flexion 120°  
  - ABD, ADD as tolerated  
  - Avoid forced hip external rotation,  
  - Avoid hip rotation with hip flexed >90°  
  - Standing internal rotation, prone rotations, circumduction  
  - Prone extensions & hamstrings curl after Week 2  
  - Isometrics – gluts, quads, HS, abdominals, ABD, ADD (avoid flexors)  
  - Stationary bike – low resistance after week 1; 20 minutes BID as tolerated

## Phase II

**Time frame**: Post-OP day 14 to week 4  
**Goals**: Progress hip ROM  
**Precautions**: Avoid hip flexor tendonitis and trochanteric bursitis  
**Exercises**:  
- Continue therapeutic exercises  
- Progress PROM as tolerated  
- Progress strengthening and isotonics  
  - Isotonics all hip muscle groups except hip flexors  
  - Side-lying plams, bridging, sidelying leg raise  
  - Modalities prn – E-stim, US  
  - Begin pool therapy when portal sites well healed  
  - CV – stationary bike low resistance – advance time, add elliptical

## Phase III

**Time frame**: Weeks 4 – 10  
**Goals**:  
- Progress hip strengthening  
- Early restoration of balance/proprioception  
**Precautions**: Avoid hip flexor tendonitis and trochanteric bursitis  
**Exercises**:  
- Continue therapeutic exercise  
- Full PROM – hip flexor & ITB stretching  
- Progress strengthening  
  - Add hip flexor isotonics, begin short lever hip flex  
  - Add leg press, begin bilateral, then unilateral  
  - Side stepping with theraband  
  - Core strengthening – frontal and side planks  
  - Begin proprioception – bilateral, then unilateral, advance as tolerated  
  - Advance elliptical  
  - Add stair stepper
### Dr. Muller's Protocol

<table>
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<tr>
<th>Phase</th>
<th>IV</th>
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<tbody>
<tr>
<td>Time frame</td>
<td>Weeks 10 – 14</td>
</tr>
<tr>
<td>Goals</td>
<td>Increase functional activity</td>
</tr>
<tr>
<td>Precautions</td>
<td>Do not start Phase IV until full ROM, good core/hip strength and acceptable balance</td>
</tr>
</tbody>
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| Exercises       | • Continue therapeutic exercise  
                  • Progressive core & bilateral LE strengthening  
                  • Outdoor bike and jog, then light running  
                  • Improve endurance |

### Dr. Mueller’s Protocol

<table>
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<tr>
<th>Phase</th>
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<tr>
<td>Time frame</td>
<td>Weeks 14 – 18</td>
<td>Beyond week 18 – Return to sport</td>
</tr>
</tbody>
</table>
| Exercises | • Lunges, single leg squats, plyometrics  
                  • Agility drills – lateral, diagonal  
                  • Begin functional exercises  
                  • Progress running program – sprinting, cutting  
                  • Advance functional exercises  
                  • Sport specific agility drills  
                  • Training |
References:


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